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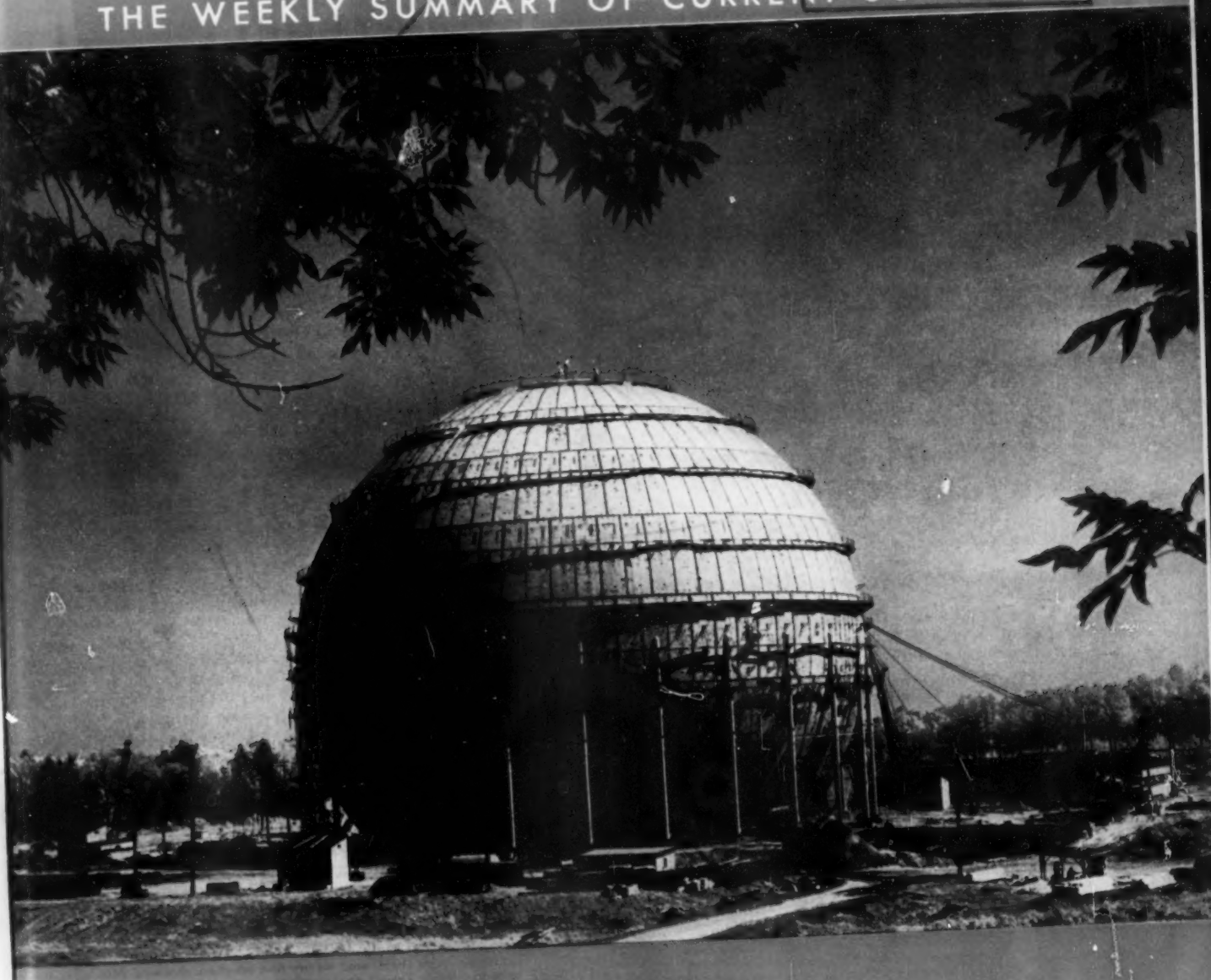

Atomic Sphere

See Page 262

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MEDICINE

Polio Vaccine Next Year

Plan to give hundreds of thousands of children vaccinations against polio starting next year. The vaccine is capable of stimulating the production of antibodies against polio.

► NEXT MARCH will probably see the start of the world's biggest trial of vaccination against infantile paralysis, or polio, short for poliomyelitis. This will be vaccination to prevent the disease, not gamma globulin treatment to ward off paralysis.

At that time hundreds of thousands of children will be getting "shots." Half of them may get "shots" of a new vaccine made to protect against all three known types of polio virus. The other half may get "shots" of some other, harmless material. It may be a salt solution, or it may be a vaccine of the kind many children get anyway, such as the "shots" against diphtheria, tetanus and whooping cough.

Only a few persons will know which children got which. When the 1954 polio season has come and gone, scientists will count noses to see how many in each group got polio.

This, roughly, is what can be expected on the basis of information now available.

"Definitive" planning is now being done for large scale testing of a polio vaccine to see whether it protects children exposed to the disease under natural conditions, that is, during an epidemic, Basil O'Connor, president of the National Foundation for Infantile Paralysis, announced in New York.

At the same time Dr. Jonas E. Salk of the University of Pittsburgh reported to the American Academy of Pediatrics in Miami, Fla., that he has now vaccinated a total of 637 children and grown-ups.

The vaccine, he declared, is completely safe and capable of stimulating the production of antibodies against polio. These antibodies appeared in the blood within a few weeks and were still there three to four months later. In some of a group vaccinated earlier, antibodies against polio persisted for seven months.

Appearance of antibodies shows immunity to the disease.

Dr. Salk gave several different kinds of vaccines to the group. All were made from all three types of polio virus grown on monkey kidney tissue. This tissue, he finds, gives the greatest virus production. The virus is then chemically killed by formalin and mixed with either water or water and mineral oil. Some got one "shot" of vaccine and some got two or three doses at weekly intervals. Those vaccinated ranged in age from three years to over 21. They were "volunteers" and were residents of Allegheny County, most of them living in Pittsburgh suburbs.

This test of the vaccines was made between March and May, 1953. When the first polio case was reported in the county, in May, Dr. Salk stopped the trial. This was so any antibody rise could be held due to the vaccine and not to exposure to the disease.

Mr. O'Connor did not give any details of the plans for next year's large trial of the vaccine, but he did say the vaccinating would be done early in the year and in a non-epidemic period. This, with Dr. Salk's report, makes March seem the likely month, though February might be chosen.

Production of large quantities of virus for the trial is already under way and National Foundation authorities do not expect any shortage in this material from which the vaccine will be made.

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MEDICINE

Vaccine Trial Changes Policy on Polio Funds

► PLANS FOR large scale trial of a new polio-preventing vaccine are changing the money spending policy of the National Foundation for Infantile Paralysis.

Next year one-third of the money raised through the March of Dimes in January will be forwarded to national headquarters to finance the new prevention program and to buy gamma globulin for temporary paralysis-preventing work.

The remainder of the March of Dimes funds will be divided 50-50 between the national headquarters and local chapters.

In the past, all the March of Dimes money was divided 50-50 between headquarters and chapters. The chapter funds are used for local epidemic aid or to supplement national epidemic aid, while the funds going to headquarters are used for research, professional education and emergency aid to chapters.

The new prevention program is expected to cost $26,500,000, which means that about $75,000,000 will be needed for 1954.

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METALLURGY

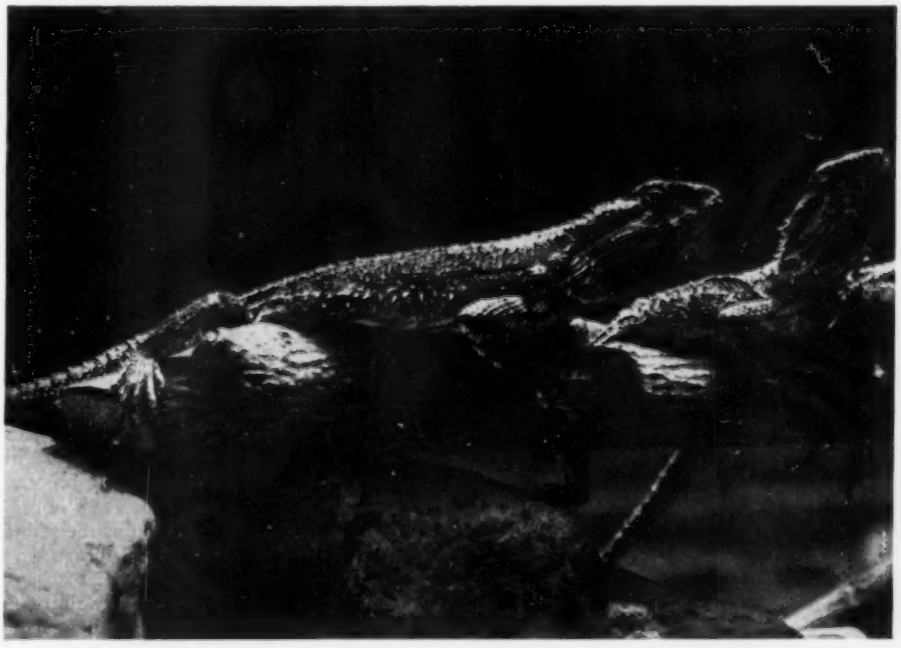
X-Ray Device Used To Study Metal

► THE CAUSE of brittleness in steel and other metals at low temperatures is being explored by Dr. Daniel Rosenthal and Murray Kaufman of the University of California at Los Angeles.

They have developed a special low temperature X-ray defraction apparatus to study the crystalline process by which some metals become brittle at low temperatures.

A super freeze is maintained by circulating liquid nitrogen through a tubular specimen which is being rotated under a load. X-ray pictures of the deformation of the specimen are recorded by a special camera attached to the apparatus.

Science News Letter, October 24, 1953



PROTECTIVE DEVICE—The "beard" on these bearded lizards is actually a bluff for the sake of defense. The desired effect is obtained by expanding the skin covering the throat. These bearded lizards reside in the National Zoological Park in Washington.

BIOCHEMISTRY

Blood Pressure Lowered

► DISCOVERY OF a blood pressure lowering chemical in rhododendron leaves is announced by scientists at the National Heart Institute, Bethesda, Md.

It is called andromedotoxin. It temporarily lowers blood pressure in animals. Tests on patients have not yet been made. The new drug will not cure high blood pressure, but is believed to have possibilities as treatment in some cases.

Chemically, the compound is pure. Its structure, however, is a mystery. It resembles the veratrum alkaloids in physiological actions, but is not nitrogen-containing, as alkaloids must be. It has a strong but brief hypotensive effect in low doses.

This work has been carried on by two teams of research workers. Isolation procedures for obtaining the material from the rhododendron leaves were conducted by Drs. Evan C. Horning, H. B. Wood, V. L. Stromberg and J. C. Keresztesy, in Bethesda, Md. Pharmacological work with animals was done at Emory University School of Medicine by Drs. Neil C. Moran and A. P. Richardson.

To isolate this compound, fresh leaves of the rhododendron were chopped, then boiled for about an hour, and strained to make a brew which starts out looking like strong black coffee and ends up resembling new-fallen snow, of snowball consistency. Over 1,000 pounds of leaves were required to make about one ounce of the chalk-white, clumpy substance. The leaves came from West Virginia and North Carolina and were collected by the Department of Agriculture.

Actually, many chemical steps are necessary in purifying the compound. Special methods were developed for extracting the material from the leaves, for precipitation procedures to eliminate unwanted substances, and for purification.

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BIOPHYSICS

New Kidney Facts

► NEW KNOWLEDGE of kidney structure and function is coming from electron microscope studies reported by Prof. B. Vincent Hall of the University of Illinois at the International Congress on Pediatrics meeting in Havana, Cuba.

His studies were made on rat kidneys at the Argonne National Laboratory, Lemont, Ill., with the assistance of Evans Roth and Vera Johnson.

There is evidence, Prof. Hall reports, that the human kidney is able to function efficiently through the agency of capillaries, technically called glomeruli, unsupported by connective tissue and projecting into the area where waste products of the body are first filtered.

In the kidney, the glomeruli are the terminal ends of the fine arteries. They have been estimated as numbering from one to five million in the human kidney—each less than one-hundredth of an inch in diameter. Heretofore, these glomerular capillaries have been assumed to be surrounded by an extra-cellular tissue something like the cuticle of the skin. This tissue has been called the "basement" membrane by scientists observing it through the conventional "light" microscope.

Electron microscope photographs of the glomerulus of the rat show this so-called "basement" membrane where the filtering process actually starts to be a complex structure, not a simple membrane as supposed.

The inner part of the glomerular capillary wall is seen under the electron microscope as a lining network corresponding to the course screen in a city water filtering system. The red blood cells are filtered off through this network. The outer part that serves as the ultra-filter is a finely porous membrane which filters off protein molecules and allows only water, salts and waste products to go through. The cells covering the capillary wall in the glomeruli form an exceedingly intricate and extensive system of minute canals which facilitates, and perhaps regulates, the filtration process.

Prof. Hall's study shows that the beginning of urine formation is apparently accomplished by filtration through preformed pathways. Apparently true also of the human kidney, his observations of the rat glomerulus afford a new basis for re-studying the function and pathology of the human organ.

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OPHTHALMOLOGY

Lost Eye Sheds Light On Seeing in Dark

► RECENTLY A man lost his eyes—but science gained new information on seeing in the dark, Dr. Frederick Crescitelli of the University of California at Los Angeles and Dr. H. J. A. Dartnall of the Institute of Ophthalmology, London, England, report.

The process of vision in the dark is centered around a protein pigment in the retina known as visual purple. Since human eyes are seldom available for biochemical studies, most of the theories concerning the human visual pigment were based upon that of the frog, thought to be identical with that of the human being.

Recently the two scientists were able to obtain a human eye from a patient who had to have his eyes removed because of a cancerous growth. By special processing, the pigment was separated from other portions of the retina and carefully analyzed photochemically. They found indications that the pigment is the chemical primarily concerned with the ability to see in the dark, as had been thought, but that it is somewhat different from the visual purple of the frog.

It is thought that this study may bring about changes in the theories of excitation of the visual sense cells, or retinal rods, many of which were based upon data from the frog visual pigment.

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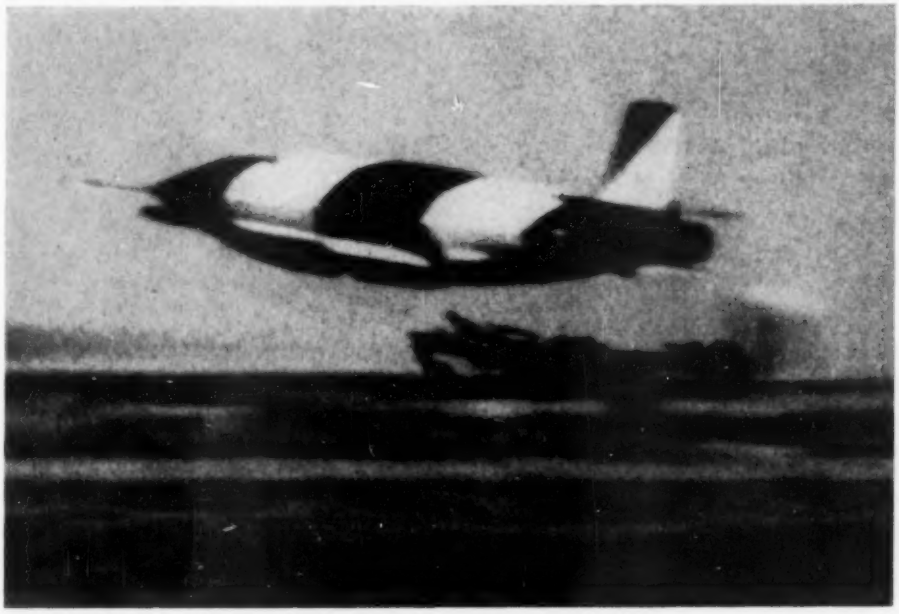

JINDIVIK ROARS AWAY—The Australian target plane shown above darts through the sky while hotly pursued by guided missiles. Controlled by radio from the ground or from a "mother" plane, the little jet takes off from a cart and lands on a skid—unless it falls victim to the guided missile under test. Designed to be shot down in great numbers, a little target plane can be built for $14,000.

OPHTHALMOLOGY

Army Tests Contact Lenses

► ADVANTAGES AND disadvantages of contact lenses for military service and civilian use were reported by Dr. James L. McGraw of Syracuse, N. Y., and Dr. Jay M. Enoch of Fort Knox, Ky., at the meeting of the American Academy of Opthalmology and Otolaryngology in Chicago.

Their report was based on a study by the Army Medical Research Laboratory in which tests were made in the laboratory and in the field under conditions like all those a military man might meet in routine life and in battle.

Contact lenses are thin shells of glass or plastic worn on the eyeball instead of conventional spectacles or eyeglasses.

Four types of contact lenses, as well as ordinary spectacles, were tested in various activities, in different temperatures even to the extremes of 40 degrees below zero and 120 degrees above, and a simulated altitude of 20,000 feet.

Contact lenses were for the most part superior to spectacles in the field tests, the investigators stated. For ordinary use, on the other hand, old-fashioned spectacles have many advantages on their side. It was not possible to make a blanket approval or disapproval of either of these indispensable aids to vision.

One of the biggest advantages of contact lenses shows up when the weather is bad. Rain, snow and mud present no problem when they are worn. Frosting and steaming is avoided. Headgear and sighting devices and gas masks all present problems to the spectacle wearer which contact lenses do not.

In strenuous physical activity, spectacles are easily dislodged and broken, while contact lenses are not and also offer greater protection to the eyes. Contact lenses do not reflect light as spectacles do and therefore are less likely to reveal a hidden position to the enemy. For some eye conditions, contact lenses give better vision.

The disadvantages of contact lenses are their cost, the time and skill required for fitting them, Drs. McGraw and Enoch pointed out. Other problems are that some contact lenses must have an accessory fluid; it is difficult to keep them clean; they are easily lost; the glass ones are easily broken, and the eyes are more sharply irritated by gases, smoke and dust when contact lenses are worn. The length of time they can be worn is limited.

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For the fifth consecutive year, the total number of *students* enrolled in approved U. S. medical schools has established a new record; the 1952-53 total was 27,688.

Whooping cranes, seriously threatened with extinction, winter in Arkansas after spending the summer in Canada's Northwest Territories.

AERONAUTICS

Australian "Jindivik" Is Guided Missile Target

► A PILOTLESS target plane powered by a jet engine has been created in Australia to give lively chase to new guided missiles tested on the Woomera rocket range.

Developed by the Australian Aircraft Factory with aid from the Aeronautical Research Laboratory at Melbourne, the little plane was designed to be expendable in great numbers. Cost of the Jindivik is about $14,000.

The Jindivik takes off from a cart-like carriage which jettisons when the plane climbs into the air. Then the plane can be radio controlled in flight by ground technicians or by "pilots" in a mother plane flying far enough away to be secure from the guided missiles under test. If the plane successfully eludes its deadly pursuers, it lands on a special skid.

The plane weighs 6,500 pounds, has a wingspan of 20 feet and a fuselage length of 22 feet.

Until six months ago, the plane was tested by pilots who actually flew the plane by its own controls. But now the pilot has been replaced with electronic equipment which permits the plane to be shot down at no hazard to human life.

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TECHNOLOGY

Baltimore Western Union Tries Tired Messengers

► WESTERN UNION officials in Baltimore are trying out tired messengers to speed telegram delivery in the suburbs. The messengers are rubber-tired station wagons, however, not exhausted cyclists.

When a telegram is received at the central office, a station wagon cruising in the vicinity of the addressee is alerted by radio. Then the telegram is transmitted to the spinning drum of a Telefax set in the vehicle. By the time the telegram has been transmitted, the car has reached the message's destination. The driver merely slips it into an envelope, hops out of his traveling office and jabs the doorbell to deliver the telegram to the addressee.

The experimental system enables one messenger to deliver more than nine telegrams an hour. Company officials seem pleased with the results turned in so far by their six roving offices. When the "bugs" are worked out, they plan to extend the Telefax station wagon system to other cities.

They even are contemplating a private sort of traveling message receiver for the businessman who rides around in an automobile equipped with telephone. They believe that their Telefax receiver can be adapted to plug into this radiophone to take down in written form office memos, reports and messages sent to the man by his office.

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MEDICINE

Help Dystrophy Patients

Treatment with amino acids and selected vitamins brings improvement in 10 patients with muscular dystrophy, a disease with previously little hope for aid.

➤ HOPE, WHERE there has been virtually none, may be at hand for victims of muscular dystrophy, a disease in which the muscles gradually waste away.

The hope lies in a new treatment reported in *California Medicine* (Oct.) by Dr. J. Ray Van Meter of the University of California School of Medicine.

Dr. Van Meter has used amino acids and selected vitamins in 10 patients over periods ranging from two months to a year. Improvement was noted in every patient, including a return of strength and a sense of well-being.

Though not all changes occurred in all patients, the improvements included increase in size of wasted muscles, restoration of normal respiratory action and relief of depression. One woman, a complete invalid, was able to resume all her household chores. In general, the first signs of improvement were noted in from three weeks to a month.

No scarce, unusually expensive, or new drugs are involved. All components of the formula are made in quantity by pharmaceutical houses.

Dr. Van Meter cautioned that his report is preliminary. Not enough patients have been observed over long enough time to evaluate the treatment at present. Moreover, other doctors must try out the treatment.

If it bears up under further research, the treatment will be the first big break in a disease that has been particularly resistant to medical efforts. Most of the reasonable drugs in the pharmacopaiea—including, recently, testosterone and vitamin E—have been tried without success.

Dr. Van Meter based the formula of his treatment on the idea that one of two deficiencies of body chemistry might be responsible for muscular dystrophy.

First, there might be a failure of the digestive system to split protein foods, like meat, into amino acids. Proteins are made of combinations of some 22 amino acids. When proteins are taken into the body, the digestive system normally breaks them down into the amino acids. Then these amino acids can be recombined, with the aid of enzyme systems, into new body-building proteins, like muscle tissue. If the protein break-down system doesn't work, no amino acids are available to build new protein tissue.

Second, there might be a failure of the enzyme systems responsible for combining the amino acids into proteins—in this case, into muscle tissue. Enzymes are chemicals that provide a large part of the body's chemical reactions, and vitamins are intimately involved in the enzyme reactions.

So Dr. Van Meter prepared a replacement formula to counter both of these possible deficiencies. It includes 22 amino acids and what he considers essential vitamins. The amino acids were prepared by the digestion of proteins by enzymes from hog pancreas, the usual commercial method of preparing amino acids. All components of the formula are made in quantity by pharmaceutical houses.

The scientist said that the big job of research lies ahead. He started out on a strictly trial-and-error basis. The results now call for biochemical studies to determine what changes are produced in body chemistry to account for the improvement of the patients. The factors or combination of factors in the broad prescription responsible for the effects must also be determined by a process of elimination. These studies are now proceeding.

Muscular dystrophy is a disease characterized by progressive wasting of the muscles. It is inherited, may strike in early childhood or not until later in life. When it strikes children, it usually progresses rapidly. In middle life it is more benign.

The first symptoms may be an inability to raise the arms to comb the hair, an awkwardness in walking or a lack of balance. The use of the arms and legs is gradually lost, and in the overwhelming majority of cases the patient eventually becomes a complete invalid, unable even to turn over in bed without aid.

The face muscles may become paralyzed, and should the disease reach the chest muscles, breathing is slow and difficult.

Muscular dystrophy does not itself kill, usually. But it so weakens the body that other diseases kill easily. A cold may be dangerous.

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GENERAL SCIENCE

Bureau's Work Praised

➤ THE NATIONAL Bureau of Standards will have a larger program of basic research serving the government and the nation if the recommendations of the scientists' evaluating committee just made public are implemented.

Counteracting the criticism leveled at this government research establishment when the new administration took over, the nine-man committee, representing scientific and technical societies, reported to Secretary of Commerce Sinclair Weeks that the Bureau of Standards is vital to national strength, that it has a splendid record and tradition with competent and loyal staff, and that cuts in funds during the past three years should be restored and augmented to increase its usefulness.

The committee, headed by Dr. Mervin J. Kelly of the Bell Telephone Laboratories, recommended that policies on commercial product tests be the responsibility of the Secretary of Commerce, but that the Bureau continue to publish freely new scientific and technical information from its work.

Since controversy over a commercial battery additive brought on the investigation, suggested new procedures for making known evaluation tests of commercial products of industry are critical parts of the report.

More activity, increased space and modernization of facilities for the Bureau's basic programs in physics, mathematics, electronics, chemistry, metallurgy and engineering were recommended. Advisory committees in various scientific and technical areas are urged. The government should make larger use of the Bureau's services, in the committee's opinion.

Divorce of most projects of weapons development from the Bureau and transfer to the Department of Defense has already been accomplished. These projects constituted five-sixths of the $48,000,000 of the Bureau's funds in the 1953 fiscal year.

Another committee appointed to appraise the quality of work performed by the Bureau of Standards on the battery additive AD-X2 has not yet reported. Dr. A. V. Astin, Bureau director once fired by Secretary Weeks, has been retained permanently in his job on the Kelly Committee's recommendation.

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Huge Sphere Houses A-Sub Power Plant

See Front Cover

➤ WITH ITS 3,850 tons of steel in place, the huge sphere that will house the prototype of an atomic power plant for submarines is shown on the cover of this week's SCIENCE NEWS LETTER.

Rising as high as an 18-story building, the big ball is made of inch-thick steel plates joined together by more than five miles of welding. It was constructed at West Milton, N. Y., by the Chicago Bridge and Iron Company for the Atomic Energy Commission, as part of the facilities of the Knolls Atomic Power Laboratory, operated by the General Electric Company for AEC.

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3-D X-RAYS—Flat shadows pop up in sharp contrast in the three-dimensional X-ray movies developed at the University of Washington School of Medicine in Seattle. The revolving polarized glass plate on the left of the machine polarizes alternate frames of the film in the opposite direction. Al Nash uses conventional 3-D glasses to get the depth illusion.

CHEMISTRY

Seek "Red Tide" Poison

Bacteriological warfare experts are testing samples of the organism causing the fish-killing "red-tide," in a joint effort with biologists to isolate the poison factor.

► BACTERIOLOGICAL WARFARE experts in the Army Chemical Warfare laboratories have joined forces with biologists of the U. S. Fish and Wildlife Service to isolate the mysterious poison in the "red tides" that have killed billions of pounds of fish in the Gulf of Mexico in recent years.

Working on the theory that the Army specialists know more about poisons than anyone else in the country, Howard E. Eckles, chief of the marine fisheries section of the Fish and Wildlife Service, reports that scientists are shipping samples of *Gymnodinium brevis,* the microscopic organism which causes the so-called tide, from the Gulf to Camp Detrick, Md., for chemical analysis.

Rumors have circulated in Washington that the Army was interested in the organism as a possible instrument in bacteriological warfare. Mr. Eckles discounted the rumor entirely.

"We want to know what the poison is that kills the fish and they have the equipment to find out," was his comment.

In 1949, some scientists advanced the theory that the fish were killed by the lack of oxygen in the water during the evil-smelling tide. This theory has been abandoned and biologists are now convinced that the organism gives off a poison which kills the fish.

The organism is neither a plant nor an animal, but falls in between and is technically called a dinoflagellate. Under certain conditions, it suddenly bursts into bloom causing the fish-killing patches known as red tide.

Scientists in the Fish and Wildlife Service have on two occasions killed off small patches with copper sulfate crystals. One ton of crystals costing $275 will clear up a patch approximately three-quarters of a mile square, but this method is effective only in the earliest stages of a bloom. When the patches grow to cover many square miles of the sea, the copper sulfate cannot be used to control the organism.

Albert Collier, a marine biologist, has found that the *Gymnodinium brevis* is usually present in water near the shore in non-poisonous concentrations. An unusually heavy rain or river run-off that lowers the salt content of the water, coupled with still air, are the conditions necessary for a bloom. During a bloom the number of individuals per quart of water explodes from 1,000 to 60 million or more, each about one-thousandth of an inch long. A squall or storm that mixes the red tide patch with normal sea water clears up the condition.

Scientists are now establishing a series of tests that will make it possible to detect the start of a bloom. Use of the copper sulfate crystals at the early stage may eliminate the problem in the future.

The organism's poison is so toxic that winds blowing from the infested area carry an odorless vapor that causes irritations characteristic of very severe hay fever. When chemically treated, the thick water may be diluted as much as 1,000 to one and still kill fish in pools within an hour.

No evidence has ever been presented that the huge losses have affected the total fish population. The indirect economic effects to the tourist industry when tons of dead fish are piled on beaches and the health hazards have been two of the main spurs to the research work.

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VITAL STATISTICS

Population to Triple in Latin America by 2000

► THE POPULATION of Latin America, including the West Indies, will triple in 47 years if the present growth rate continues, Robert C. Cook, director of the Population Reference Bureau, Inc., in Washington, predicts.

Latin America is "the world's most explosive area of population growth," he states. Its growth rate is two and a half percent annually, compared to slightly more than one percent each year for the world, and one and seven-tenths percent for the U. S.

Mr. Cook estimates that the total population of Latin America is now about 173,000,000, which is approximately equal to the combined totals of the United States and Canada. If the hemisphere's present growth rates continue to the year 2000, the population score would stand at 250,000,000 for North America, 550,000,000 for Latin America and the West Indies.

Even faster growth is possible, Mr. Cook foresees, because death rates, which have shown some decline, could be "drastically" reduced by modern medicine in most South American countries.

"The traditionally high birth rates are expected to remain high for some time to come," Mr. Cook states. "If high fertility persists and mortality sharply declines, present rates of growth will skyrocket in many countries."

He finds that if the death rates should fall to the level of those in the United States, the Latin American rate of population growth would increase to three and three-tenths percent annually. With such a rate, the population would pass the billion mark soon after the year 2000.

Science News Letter, October 24, 1953

GENERAL SCIENCE

New Research Tool For Arctic Living

► A NEW research tool has been made available to scientists and the armed services to aid them in understanding, living in and defending the far northern regions of the world. (See p. 268.)

It is the "Arctic Bibliography," prepared by the Arctic Institute of North America with the joint support of the Army, Navy and Air Force. Within its three bound volumes and 4,500 pages are listed and summarized more than 20,000 scientific papers and reports pertaining to the Arctic and also official documents, books of exploration and general magazine articles.

The bibliography is the work of a Directing Committee under the direction of Dr. Henry B. Collins of the Smithsonian Institution. The editor is Marie Tremaine.

Included are publications in English and in foreign languages, particularly Russian and Scandinavian, relating to the Arctic and pertaining to natural resources, industrial development, native peoples, social and economic conditions, health and medicine, plant and animal life, agriculture, geography, geophysics, geology, glaciology and meteorology. The last-named subject is of especial importance in the United States, because the Arctic is the birthplace of our weather.

Previously, the most recent complete bibliography of the Arctic was published in Vienna in 1878. The three volumes bring the bibliography up to date through 1949. It is available at the Government Printing Office at a price of $12.75 for the three-volume set. A fourth volume is now in press and a fifth volume, now in preparation, will cover material through 1953.

Science News Letter, October 24, 1953

METEOROLOGY

Minneapolis Best for Viewing June Eclipse

► THE BEST spot for viewing next June's eclipse of the sun is Minneapolis, Dr. E. M. Brooks of St. Louis University predicts. There the early morning sky is less often overcast and the air is relatively dry, his studies of weather in past years along the eclipse path have shown.

Nevertheless, the chance that the eclipse will be visible from Minneapolis is less than 50%. At other spots along the eclipse path, however, the chances of good observing weather are even less.

Dr. Brooks' study was made to help astronomers pick now their best site for seeing the total blackout of the sun due on June 30, 1954. The most reliable plan, he suggests, is to fly an airplane above any low clouds present on eclipse day. No meteorologist, Dr. Brooks warns, can give a reliable weather forecast until a few days before the date.

Since astronomers must make plans and set up their equipment weeks in advance, past records must be used to make estimates of future observing weather.

Seven of the most accessible sites along the total eclipse path were investigated by Dr. Brooks. Totality will be visible in the United States across an area running from northeastern Nebraska across South Dakota, Iowa, Minnesota, Wisconsin, upper Michigan and the provinces of Ontario and Quebec in Canada before passing over the Labrador coast.

Dr. Brooks tabulated weather reports over the last five years from U. S. Weather Bureau daily maps for June and over six years for July for each day at 6:30 a.m., closest weather-reporting hour to the eclipse, scheduled to begin about 5:00 a.m. CST. The sites considered were Spencer, Iowa, Minneapolis, Park Falls, Wis., Calumet, Mich., and White River, Kapuskasing and Moosonee, Ontario.

Of the sites considered, Park Falls was found to be the best for photographing the eclipse, although Minneapolis gave the best chance at visual observation. For photographing sky objects, including the sun, the sky should be completely clear, the relative humidity should be as low as possible, and the sun and the moon should be at least five degrees above the horizon.

Science News Letter, October 24, 1953

ENGINEERING

Future Highway Building May Involve Night Work

► ROAD BUILDERS soon may work the clock around to complete new ribbons of asphalt and concrete to link busy American cities.

Taking a tip from dam builders who pour concrete at night with the same ease that they pour it during the day, New York highway construction engineers tried out a 'round-the-clock program, with time out for rush hour traffic, in recent work on the Long Island Northern State Parkway.

The experiments were so successful that the New York State Thruway Authority now plans to let a contract for another project. Under the contract, work crews will plug away at their task 24 hours a day.

The Long Island Parkway resurfacing project involved the placement of 40,000 tons of asphalt. To expedite both traffic and resurfacing, part of the road was closed after 9 a.m., and was not reopened until 4 p.m., when the afternoon exodus from New York City began. After 8:30 p.m., traffic again was diverted to parallel roads so crews could resume work until 6 a.m.

During the periods when the road was open to traffic, gasoline trucks filled the fuel tanks of the highway machines while other trucks brought up surfacing materials.

Within six and a half weeks, the 40,000 tons of asphalt were laid on the highway which normally carries 60,000 vehicles a day.

Science News Letter, October 24, 1953

IN SCIENCE

MEDICINE

Sleeping Medicines in Permanent Solutions

► GOOD RESULTS in trials of sleeping medicines put up in permanent solutions are reported by Drs. David C. English and Rudolf Leiser of Wayne County General Hospital, Eloise, Mich.

One, not yet released for general use, contains sodium amytal in a special glycol-water base. Injected into the veins, it gave the same sedative and sleep-inducing effects as sodium amytal solution freshly made, as is now necessary practice. The new preparation takes effect more slowly when injected into the muscles, but the total effect is the same, the Eloise doctors report.

A related sedative medicine, sodium seconal, has been prepared in a similar solvent and has now been released for general use. This was used on 30 patients with excellent results, the doctors report in the *American Journal of Psychiatry* (Oct.)

One advantage of the new forms of the medicines is that in emergencies no valuable time need be lost in preparing solutions for injections. The medicines have to be prepared immediately before use when used in water solution because the chemicals gradually decompose in water.

The new preparations were tried on 105 psychiatric patients at Wayne County General Hospital. The preparations are made by Eli Lilly Company.

Science News Letter, October 24, 1953

PHYSICS

Sun Can Heat Houses But Two Systems Needed

► SUNLIGHT CAN be used to heat a house now most of the time, if the owner is willing to install an extra heating plant, a solar one and one of the conventional sort that will take care of cloudy days.

Solar power plants will both heat and cool houses in southern United States within 10 years, it was predicted at the symposium on the utilization of solar energy in Madison, Wis.

"Sun worshippers," as scientists call themselves, are studying energy sources for a hundred or a thousand years in the future. Energy availability is partly a matter of how much we are willing to pay for it.

Scientists cannot tell whether solar or nuclear (atomic) power will come into use first when the oil and coal begin to be exhausted a few decades from now. Energy used by the world's civilization is increasing at the extraordinary rate of three percent a year.

Science News Letter, October 24, 1953

NE FIELDS

PHYSICS

300 Man-Years of Work To Complete Cosmotron

➤ MORE THAN 300 man-years of work were required to complete the cosmotron, giant atom smasher at the Brookhaven National Laboratory, officials have revealed.

The total cost for development, design, construction and testing was about $7,000,000, Dr. M. Hildred Blewett, editor of the first comprehensive report on the project, states. The magnet and its power supply, and the building and auxiliary equipment cost about one-half of the total, he estimates.

Construction of the cosmotron was officially begun in July, 1948. Protons, the hearts of hydrogen atoms, were "first injected into the completed cosmotron in March, 1952," Dr. Leland J. Haworth, director of the Laboratory, reports. Circuits are now being constructed to raise the energies of the protons to about three billion electron volts, he reports in the *Review of Scientific Instruments* (Sept.).

Science News Letter, October 24, 1953

ARCHAEOLOGY

Find Jewel-Like Tools Of Pre-Eskimo People

➤ FRESH EVIDENCE of a migration of man or at least of his ideas all the way from Europe through Siberia, Alaska and Canada to Greenland is just reported by Dr. J. Louis Giddings Jr., of the University of Pennsylvania.

Newest link in the chain of this pole-girdling migration is a collection of tiny, delicately made engraving tools found by Dr. Giddings near the west coast of Hudson Bay on North Knife River, Manitoba. Precisely formed from white chalcedony and agate, these little tools are of the type known to archaeologists as burins and originally thought peculiar to Stone Age man in Europe. About five years ago Dr. Giddings found burins like these at Cape Denbigh, Alaska.

Since no organic remains were found with the Knife River burins, it is impossible to say just how old they are. Dr. Giddings estimates that they could be "anywhere from 1,000 to 10,000 years" old.

It is apparent, however, Dr. Giddings says, that the Knife River people preceded the Dorset culture, the earliest known Eskimos.

It was an Indian with the picturesque name of Jawbone who made the original discovery of the Knife River burins. Jawbone gathered up about 20 of the implements and took them to the town of Churchill and gave them to Mrs. Irwin H. Smith, an amateur scientist there.

When Dr. Giddings, making a search of the Far North for just such implements, reached Churchill, Mrs. Smith contacted him and showed him the burins. Dr. Giddings then located Jawbone and hired him to guide him to the site. They went up Hudson Bay about 20 miles to the mouth of Knife River and then took a three-day canoe trip upstream, bucking treacherous rapids all the way. The site was about two miles from the river on a sandy, wind-blown shelf forming an arc around a lake—a small plateau that may have been an ancient river terrace. The tools lay on the surface, laid bare by the winds.

Science News Letter, October 24, 1953

BIOCHEMISTRY

Brain Sensitivity to Sugar Linked to Obesity

➤ CELLS IN the brain which regulate appetite are sensitive to the level of sugar in the blood. When the sugar is low, the brain cells seem to signal for more food and a person eats more. When the sugar level rises, the reverse seems to be true.

Recent evidence favoring this clue to the cause of obesity, or overweight, was cited by Dr. Fredrick J. Stare of Harvard School of Public Health, Boston, in a report to the American Chemical Society.

Obesity, he said, is a disease with multiple causes. It cannot be explained entirely in terms of overeating. The primary cause is unknown, although overweight results from an imbalance between energy intake and expenditure.

Scientists need to find what factor or factors disturb the mechanism regulating food intake to tip the balance in favor of excessive food consumption. Some of these are physical and some psychological and undoubtedly they are related.

Science News Letter, October 24, 1953

MEDICINE

Leeches to Blood Banks Theme of New Exhibit

➤ WHEN YOU go to donate blood to a blood bank, the bloodletting is done by a fine hypodermic needle skillfully inserted into a vein in your arm. Ancient bloodletting, however, was done with stone lancets, leeches and various other instruments and for many purposes other than to build up a blood bank.

A permanent exhibit on bloodletting, called "The Art of Phlebotomy," has opened at the Smithsonian Institution. George Griffenhagen, associate curator of the division of medicine and public health of the Smithsonian's National Museum, has described the exhibit as "encompassing the greatest single factor of the transition period between the witch doctor of the past and the modern physician of today."

Science News Letter, October 24, 1953

MEDICINE

Cabbage Concentrate Heals Peptic Ulcers

➤ A CABBAGE-JUICE concentrate can be used to heal peptic ulcers, Dr. Garnett Cheney of the Stanford School of Medicine reported to the National Gastroenterological Association meeting in Los Angeles.

Thus, instead of drinking a quart of cabbage juice daily, the 100 ulcer patients he treated swallowed only about three tablespoons of the concentrate. Yet their pain vanished within five days, and ulcer craters in most cases healed in an average of 13 to 14 days, about the same time as required when treatment was with the cabbage juice.

Average healing time for ulcer patients under the standard treatment of bland diet and drugs is close to 50 days.

Using cabbage-juice concentrate, patients were allowed to eat whatever cooked foods they pleased. The concentrate has now been completely dehydrated and put into capsules by Merck and Company, and patients are now being tested with such capsules.

Cabbage juice and the concentrates contain large amounts of an unidentified diet factor called vitamin U, which is believed to fortify the digestive tract against the onslaught of pepsin. Pepsin is a digestive enzyme contained in the stomach juices that can bore into tissues and cause ulcers.

Science News Letter, October 24, 1953

HERPETOLOGY

18 Kinds of Rattlesnakes Is Record Zoo Collection

➤ THE 18 kinds of rattlesnakes now in residence at the Staten Island zoo set a new record: they are by far the largest assortment of rattlers to be seen in a zoo collection.

The latest addition to the zoo's collection is a rattlesnake from Aruba Island in the Dutch West Indies, rare because it is found nowhere else except on this tiny island. The rattlesnake was a gift from Capt. R. J. Beaujon of Oranjestad, who captured the two specimens displayed in 1937 that were the first to be seen in any zoo.

The Aruba Island rattlesnake is a stunted island form of the South American diamondback. Probably because of its isolation on the windswept Aruba, the rattler attains a maximum length of only two feet and is very pallid in coloration. This fact has given it its scientific name, *Crotalus unicolor*. Very often specimens of this type of rattler are without pattern and are uniformly either pumice gray or sand yellow.

Because Aruba Island is a center of the oil industry, where huge refineries receive oil by pipelines under the sea from the mainland of Venezuela, it is a regular port-of-call for oil tankers, and was of tremendous strategic importance during World War II.

Science News Letter, October 24, 1953

ASTRONOMY

Jupiter Now Brilliant

Jupiter is the planet now dominating the evening sky. Mercury scheduled to pass across the face of the sun, an event occurring about 13 times a century, on Nov. 14.

By JAMES STOKLEY

➤ JUPITER IS now moving into a better position, for it will rise about two hours after sunset on November evenings, and remain brilliantly visible through the rest of the night.

It outshines all of the stars that are seen, and the planets as well, with the exception of Venus, which rises in the east just before dawn is breaking.

The position of Jupiter in the eastern sky, in the constellation of Taurus, the bull, is indicated on the accompanying maps. These depict the heavens as they look about 10:00 p.m., your own kind of standard time, at the first of November, about 9:00 p.m. at the middle and 8:00 p.m. at the end of the month.

Just to the left of Jupiter, in the constellation of Auriga, the charioteer, is Capella, one of the brightest stars now visible, though Jupiter exceeds it by about ten times.

To the right of the planet, in Taurus itself, is Aldebaran, a star of the first magnitude on the astronomical scale, although less than half as bright as Capella. It is noticeably red in color.

Underneath Taurus is Orion, the warrior, just above the horizon. Its low altitude somewhat dims the brilliance of its two first-magnitude stars, Betelgeuse and Rigel. During mid-winter evenings this group will shine prominently, high in the south.

Late Summer Stars Seen

Toward the west some stars that were prominent in the late summer and early autumn can still be seen, as they are getting ready to disappear from view in the evening sky. One of these is Vega, in Lyra, the lyre, toward the northwest, and directly above is Cygnus, the swan, in which Deneb shines, at the top of the "northern cross."

Aquila, the eagle, with the star Altair, is a little to the left of Lyra. Finally, Fomalhaut, in Piscis Austrinus, the southern fish, appears low in the south.

Its stars are not of the first magnitude, but a prominent "skymark," seen high in the south, helps one to find his way among the constellations. This is the "great square," three of whose stars are in Pegasus, the winged horse. The fourth, at the upper left, is Alpheratz, in Andromeda, the chained princess.

Pisces, the fishes, are below the square, toward the left, and below them is the sprawling group of Cetus, the whale.

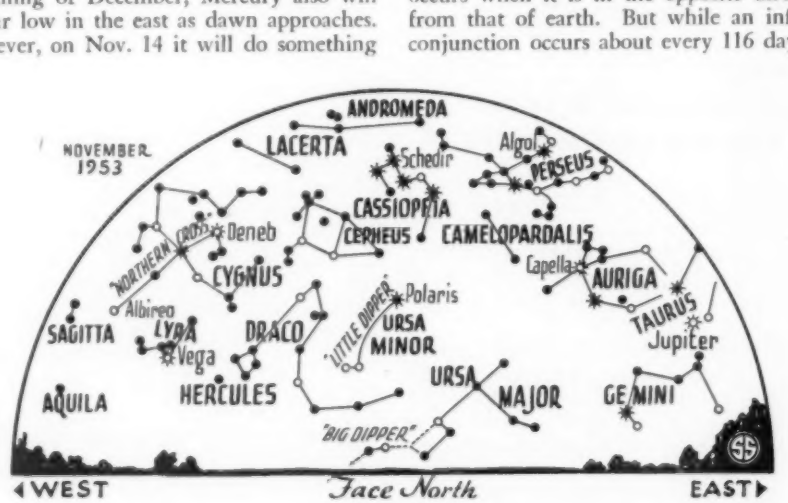
In the northern sky the great dipper, part of Ursa Major, the great bear, is close to the horizon, in its poorest position of the year. Above it is the little dipper, in Ursa Minor, the lesser bear, of which the pole star is a part. Still higher are Cepheus, the king, and Cassiopeia, the queen, the parents, according to mythology, of Andromeda.

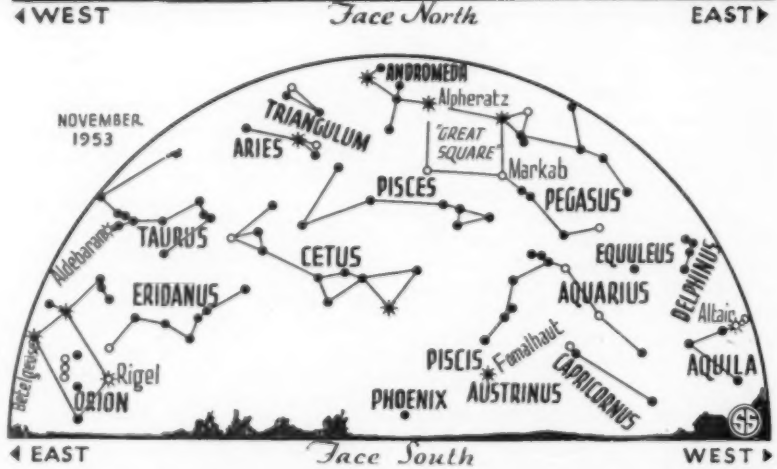
In addition to Venus, already mentioned as a "morning star," a planet that rises before the sun, Saturn can also be seen in the early morning hours. Indeed, Venus passes it on Nov. 13, but before they become visible in the U. S. Mars, too, is seen at the same time, as it rises in the east about three hours ahead of the sun.

At the very end of November and the beginning of December, Mercury also will appear low in the east as dawn approaches. However, on Nov. 14 it will do something much more rare, when it passes across the face of the sun, between the hours of 10:37 a.m., EST, and 1:12 p.m. (9:37 a.m.-12:12 p.m. CST, 8:37-11:12 a.m. MST, and 7:37-10:12 a.m. PST). This is called a transit of Mercury, but unfortunately it will not be visible to the unaided eye, even though protected by the smoked glass or dense photographic negative that must be used to observe the sun. However, a small telescope, if equipped with proper protection for the eyes against the glare, will reveal it as a tiny black spot on the upper part of the solar disk.

Instead of revolving around the sun once in 365¼ days, as the earth does, Mercury revolves around it in 88 days. However, while it makes such a circuit, the earth has traversed more than a quarter of its own orbit, so not until 116 days have passed, on the average, does Mercury catch up with the earth. This is called its "synodic" period.

When Mercury is in the same direction from the sun as the earth, it is said to be in inferior conjunction. Superior conjunction occurs when it is in the opposite direction from that of earth. But while an inferior conjunction occurs about every 116 days, at





☼ ✱ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

such a time Mercury is generally either north or south of the line joining our two planets, and thus fails to come directly between the earth and the sun.

In November and May, the earth is in the same direction from the sun as the place where the orbit of Mercury passes through the plane of the earth's orbit. Thus, if a conjunction occurs in these months, there may be a transit, with Mercury passing directly in front of the sun as seen from our planet. In May, however, Mercury is considerably farther away from the sun than in November, so May transits are about half as frequent as those toward the end of the year.

Check on Planet's Motion

The chief value of a transit of Mercury is the opportunity it gives to check accurately the movement of the planet. However, a transit of Venus across the sun has been used to give a very accurate value for the distance of the sun from the earth.

Transits of Venus are much rarer than of Mercury. They can only occur about June 7 or Dec. 8. They may, as they have been doing in recent centuries, occur in pairs. There was such a pair in June 1761 and 1769, and again in December 1874 and 1882. There will be none during the twentieth century. The next will occur June 8, 2004, and June 6, 2012, so that only the youngest of our contemporaries are likely to see them.

There cannot, of course, be transits of any other planets, besides Mercury and Venus, for these are the only ones that move around the sun in orbits smaller than ours. However, if there were astronomers on Mars, they could see a transit of the earth, although it would be considerably rarer than one of Venus for us.

Celestial Time Table for November

Nov.	EST	
2	9:00 p.m.	Moon farthest, distance 252,200 miles.
3	4:14 a.m.	Moon passes Mars.
	5:45 p.m.	Algol (variable star in Perseus) at minimum brightness.
4	9:55 p.m.	Moon passes Venus.
5	5:52 p.m.	Moon passes Saturn.
6	12:58 p.m.	New moon.
10		Meteors visible radiating from constellation of Taurus.
13	11:00 p.m.	Venus passes Saturn.
14	2:52 a.m.	Moon in first quarter.
	10:37 a.m.	Transit of Mercury (See text).
16		Meteors visible radiating from constellation of Leo.
18	1:50 a.m.	Algol at minimum.
	6:00 p.m.	Moon nearest, distance 225,200 miles.
20	6:12 p.m.	Full moon.
	10:39 p.m.	Algol at minimum.
22	1:34 p.m.	Moon passes Jupiter.
23	12:00 noon	Mercury passes Venus.
	7:28 p.m.	Algol at minimum.
28	3:16 a.m.	Moon in last quarter.
30	1:00 p.m.	Moon farthest, distance 251,600 miles.

Subtract one hour for CST, two hours for MST, and three for PST.

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ADRENAL CORTEX: Transactions of the Fourth Conference, November 12, 13, and 14, 1952—Elaine P. Ralli—*Josiah Macy Jr. Foundation,* 165 p., illus., $3.50. This conference, under the auspices of the Foundation, was intended to promote the exchange of ideas between scientists of different disciplines with regard to the functioning of this important gland.

ANDREW CARNEGIE—Alvin F. Harlow—*Messner,* 182 p., $2.75. Biography of a man who gave away more than $350,000,000, all of which he collected during his lifetime, to found thousands of libraries and research institutions.

THE ANT WORLD—Derek Wragge Morley—*Penguin,* 191 p., illus., paper, 50 cents. Interesting facts about this most widespread and successful insect, dispelling many common myths.

APPLIED ELECTRICITY—H. Cotton—*Industrial Press,* 2d ed., 482 p., illus., $4.50. Based largely on the London University course in Applied Electricity toward the B. Sc. degree in engineering.

ARCTIC BIBLIOGRAPHY: Prepared for and in Cooperation with the Department of Defense—Arctic Institute of North America, Henry B. Collins, Jr., Chairman, Directing Committee—*Govt. Printing Office,* 4,478 p., 3 volumes, $12.75 per set. Bringing together in one comprehensive list all the many scattered works on the Arctic regions. An alphabetic register lists all authors' names. The subject geographic index contains some 100,000 entries under 18,000 headings. (See p. 264.)

BALBOA OF DARIEN: Discoverer of the Pacific—Kathleen Romoli—*Doubleday,* 431 p., illus., $5.00. The romantic story of the famous "conquistador" and the colony he founded, as written by a girl from California who took up cattle ranching and historical research in the Republic of Colombia.

THE BETRAYERS—Ruth Chatterton—*Houghton Mifflin,* 310 p., $3.50. In this novel, Miss Chatterton describes a demogogic Senator and his investigation of a young nuclear physicist. The heroine, a brilliant lawyer, decides to defend the physicist in spite of the fact that her Senator husband is chairman of the investigating committee.

BROWNIE MAKES THE HEADLINES—Ted Wear—*Messner,* 63 p., illus., $1.60. A story, told for children, of a boy and his dog. It shows how a newspaper is made.

CHYMIA: Annual Studies in the History of Chemistry—Henry M. Leicester, Ed.—*University of Pennsylvania Press,* 217 p., illus., $4.50. Including papers on the Origin of Alchemy, Madame Lavoisier, and Benjamin Rush, Chemist.

THE COLEOPTERA OF THE GALAPAGOS ISLANDS—Edwin C. Van Dyke—*California Academy of Sciences,* Occasional Papers No. XXII, 181 p., illus., paper, $3.50. The coleoptera of these islands, about 600 miles from the west coast of South America, are definitely related to those of the barren grounds of South America and no doubt derived from them.

THE COMPLETE BOOK OF CAT CARE—Leon F Whitney — *Doubleday,* 284 p., illus., $3.95. This book, written by a veterinarian, is intended to complement, not replace the services of a veterinarian. Written in non-technical language for the pet owner.

CONQUEST OF THE MOON — Wernher von Braun, Fred L. Whipple and Willy Ley — *Viking,* 126 p., illus., $4.50. This book is a sequel to the previous work, "Across the Space Frontier." In the first book we were told how man can reach beyond the atmosphere and establish a station in space. This volume tells of the next step, the voyage from space station to the moon.

CURRENT RESEARCH ON VITAMINS IN TROPHOLOGY: Proceedings of the Scientific Sessions of the Eighth Annual Meeting, the National Vitamin Foundation, Incorporated, New York City, March 4, 1953—W. F. Alexander and others—*National Vitamin Foundation,* 157 p., illus., paper, $1.50.

DESIGNING ELEMENTARY CLASSROOMS: An Approach to the Problem of Classroom Design in Relation to the School Child and Program—James L. Taylor and others — *Govt. Printing Office,* 55 p., illus., paper, 35 cents. This booklet, produced by the School Housing Section and the Elementary Schools Section of the Office of Education, emphasizes that the elementary school classroom is a most important part of the school plant.

EVOLUTION: Symposia of the Society for Experimental Biology, Number VII—J. F. Danielli and R. Brown, Eds. — *Cambridge University Press (Academic Press),* 448 p., illus., $7.80. Papers read at a symposium of the Society for Experimental Biology held in collaboration with the Genetical Society at Oxford in July, 1952.

EXPERIMENTS, THEORY, AND PROBLEMS IN GENERAL CHEMISTRY: An Integrated Course—Hosmer W. Stone and James D. McCullough—*McGraw-Hill,* 352 p., illus., paper, $6.00. More than a laboratory manual, this book presents all the essentials for a first semester course for chemistry majors as well as for premedical and engineering students.

THE FIRST IRON WORKS RESTORATION—*First Iron Works Association,* 30 p., illus., paper, 25 cents. Revised and up-to-date edition of "The Saugus Restoration," published in 1951. Describes how iron was processed in this colonial iron works in the 17th century.

FLIGHT: Today and Tomorrow—Margaret O. Hyde—*Whittlesey House,* 140 p., illus., $2.50. A book for young people. Not science fiction, the author takes the reader on an imaginary flight through space, describing the event as scientists expect it to be.

HIGH FIDELITY: Design, Construction, Measurements—George Fletcher Cooper and others—*Gernsback,* 128 p., illus., paper, $1.50. Intended for the audio man, or "audiophile," who prefers to design, construct and experiment with his own audio systems.

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HUMAN LOCOMOTION AND BODY FORM: A Study of Gravity and Man—Dudley J. Morton with the collaboration of Dudley Dean Fuller—*Williams and Wilkins*, 285 p., illus., $5.00. The procedure man has followed in designing machines has long been employed by nature in fashioning the locomotor apparatus for her mobile forms of organic life. The mechanical laws underlying man's movement are here made clear.

HUNTING AND FISHING IN NORTH AMERICA—Michael Cramond — *University of Oklahoma Press*, 394 p., illus., $5.95. Written for sportsmen by an author who loves hunting and fishing.

INDIAN LEGENDS OF THE PACIFIC NORTHWEST —Ella E. Clark—*University of California Press*, 225 p., illus., $4.50. A lookout for the Forest Service has collected these ancient legends, mainly from the lips of Indian old people and the writings of pioneers. He has selected mainly the legends having to do with geographical features of the Northwest.

IN SPITE OF: A Philosophy for Everyman—John Cowper Powys—*Philosophical Library*, 312 p., $5.00. The author, in his eightieth year, tells how to build your own private philosophy of life "in spite of" all obstacles and discouragements.

THE LIMITS OF THE EARTH—Fairfield Osborn —*Little, Brown*, 238 p., $3.50. The author, a population expert, points out the importance and urgency of deciding how many the resources of our earth can support "for now, as we look, we can see the limits of the earth."

THE LONELY CROWD: A Study of the Changing American Character—David Riesman with Nathan Grazer and Reuel Denney—*Doubleday Anchor*, abridged by the authors, 359 p., paper, 95 cents. The thesis of the authors is that the typical American is changing from the strong, dominant individualist to a man chiefly dominated by his associates.

MAKE WAY FOR WATER—Eleanor Clymer—*Messner*, 63 p., illus., $1.60. A story for children that tells how city people get the many gallons of water they need for daily use.

ORCHIDS OF GUATEMALA — Oakes Ames and Donovan Stewart Correll—*Chicago Natural History Museum*, 328 p., illus., paper $4.00, cloth $5.00. Botanical descriptions.

ORGANIC CHEMISTRY — Howard J. Lucas — *American Book*, 2d ed., 760 p., $7.00. This meets the problem of covering an ever-expanding field by emphasizing some fundamental principles, so that the student can better understand the general relationships.

PARENT AND CHILD—James H. S. Bossard—*University of Pennsylvania Press*, 308 p., $5.00.

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PROCEEDINGS OF THE WESTERN COMPUTER CONFERENCE—G. D. McCann, Chairman Conference Committee — *Institute of Radio Engineers*, 231 p., illus., paper, $3.50.

REGULAS DE SELECTION PRO SPECTROS VIBRATIONAL DE MOLECULAS POLYATOMIC—Forrest F. Cleveland—*Instituto Technologic de Illinois*, 21 p., paper, 75 cents. Monograph on molecular spectra written in the new, practical, readable-at-sight international language, Interlingua.

SOME NEW AND NOTEWORTHY APHIDAE FROM WESTERN AND SOUTHERN SOUTH AMERICA (HEMIPTERA-HOMOPTERA)—E. O. Essig—*California Academy of Sciences*, Proceedings, Fourth Series, Vol. XXVIII, No. 3, 105 p., illus., paper, $2.00. Little previous work has been done on collecting and describing the aphids of Chile.

STEWART'S SCIENTIFIC DICTIONARY—Jeffrey R. Stewart assisted by Frances Elizabeth Spicer—*Stewart Research Laboratory*, 4th ed., 788 p., $10.50. For manufacturers and others concerned with the materials used by the various chemical process industries. The scope of this edition has been greatly widened.

THE THEORY OF THE LEISURE CLASS: An Economic Study of Institutions—Thorstein Veblen—*New American Library*, 261 p., paper, 35 cents. An inexpensive paper edition of a well-known classic of social science originally published in 1899 by *Macmillan*.

THIRTY-DAY FORECASTING: A Review of a Ten-Year Experiment—Jerome Namias—*American Meteorological Society*, 83 p., illus., paper, $3.50. A summary of research results and operations.

A TREE IS A TREE—King Vidor—*Harcourt, Brace*, 315 p., illus., $3.95. The autobiography of one of the pioneer directors of great films in Hollywood.

TREES OF THE WOODS—David S. Marx—*Leafprinters*, 52 p., illus., paper, $2.00. Description of the flowers, fruit, leaves and wood of native trees illustrated by leaf prints.

TREES OF YOUR TOWN—David S. Marx—*Leafprinters*, 52 p., illus., paper, $2.00. With the aid of this book, illustrated by leaf prints, you can identify the shade trees of your city streets.

Science News Letter, October 24, 1953

MARINE BIOLOGY

NATURE RAMBLINGS

Sea Horse

► IN GREEK and Roman mythology, the sea horse was a fabulous creature, half horse and half fish, driven by sea gods and ridden by their daughters, the sea nymphs.

Medieval and even more modern writers put on a few trimmings: "The Sea Horse between Brittany and Norway is oft seen to have a head like a horse, and to neigh; but his feet and hoof are cloven like to a cow's; and he feeds both on land and in the sea. He is seldome taken, though he grows to be as big as an ox. He hath a forked tail."

Neptune's Pegasus is a queer enough little fish in its own right, without embellishments which make it a new form of sea monster. Only in Pacific waters where there is giant kelp in which to hide does the sea horse grow to as much as a foot in height; elsewhere it lives out its life only a few inches high.

It has no hoofs, cloven or otherwise. Its tail is neither forked nor actually a tail, but part of its body. It has a tough hide stretched over a bony frame, which gives the impression that the sea horse wears a suit of armor.

Though the sea horse is really a fish, it acts like a monkey, coiling its posterior appendage around bits of eelgrass or seaweed and hanging there at anchor. The only difference is that the sea horse hangs head uppermost. The danger in the sea is not the chance of falling to the bottom but of falling upward to the surface.

Likewise the sea horse swims in a vertical position. Its gait is a series of short convulsive jerks—an elfin gallop hampered by blind staggers. Standing nearly upright in the water, it propels itself by a supple fin midway on its back which waves to and fro faster than the eye can see. There is a tiny fin beneath the sea horse's businessman paunch, and two others spotted where humans have ears. By waving these and bending its head, the fish goes uphill or down.

Some say the sea horse has a jet in the top of its head for sudden crash dives. A naturalist who lives in a sea horse country says, "I have seen sea horses near the surface squirt a jet of water three inches into air in their frightened efforts to submerge." But detailed studies of sea horse locomotion make no mention of such a blow-hole.

In the sea horse family, it is the male who brings up the children. In breeding season, the male develops a pouch like the pocket of a female kangeroo. The mother's eggs are laid in this pouch, and there the youngsters stay until they hatch and are old enough to swim. When they emerge, it looks exactly as if the father were giving birth.

Science News Letter, October 24, 1953

ENGINEERING

Electric Food Disposals Require Little Water

► ELECTRIC FOOD disposals that grind food scraps and sluice them down sink drains require little water to work properly.

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Science News Letter, October 24, 1953

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OPHTHALMOLOGY

New Eye Infection

► EYE INFECTIONS from a newly-discovered cause are probably widespread and extremely common, Drs. Alan C. Woods and Ronald M. Woods of Johns Hopkins School of Medicine, Baltimore, told fellow eye specialists at the meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago.

A parasite called toxoplasma seems to be the cause of these infections which doctors in the past have not been able to diagnose exactly.

Until about two years ago this infection was known to occur, with rare exceptions, only in infants. It was present at birth, and as mothers showed no recognized signs of it, the general opinion was that adults were immune to it or that it was latent and produced no symptoms. Young people who have had the disease as infants occasionally have flare-ups that are attributed to the original organism. It was not understood, however, that adults could acquire the disease, Dr. Woods said.

Two years ago Mrs. Helenor Wilder of the Armed Forces Institute of Pathology in Washington announced that she had identified parasites that appeared to be toxoplasma in tissues from eyes supposedly infected with tuberculosis. Ophthalmologists immediately began to look into eye infections for which no cause had been clearly proved, and found that a fair proportion of such cases revealed the parasite when the proper test was applied.

In view of this development, Dr. Woods and his associates reviewed a number of cases in which a clear-cut diagnosis had not been found. They had on hand in a freezer samples of blood serum preserved in the course of a diagnostic study of uveitis, an inflammation of the part of the eye that contains pigment. The blood had been used for tests, and any that remained had been kept. The serums from one particular type of uveitis were subjected to the tests for toxoplasmosis.

Of the 201 blood samples tested, the results in 58 gave reason to consider the parasite toxoplasma as the cause of the disease, Dr. Woods reported. In 42 of them the previous studies had revealed no satisfactory explanation of the infection; in ten there was evidence of childhood infection, and in six diagnoses had been doubtful, he said.

Associated with Dr. Woods in the study were Leon Jacobs and Katherine Cook of Bethesda, Md.

Science News Letter, October 24, 1953

Mars will be close to the earth in July, 1954—less than 40,000,000 miles away—and it will shine more brilliantly than any star or other planet except Venus.

QUESTIONS

BIOPHYSICS—What are glomeruli? p. 260.

□ □ □

CHEMISTRY—Why are bacteriological warfare experts testing the "red tide" organism? p. 263.

□ □ □

GENERAL SCIENCE—What were some of the recommendations of an evaluating committee concerning the National Bureau of Standards? p. 261.

□ □ □

PHYSICS—What is the Jindivik? p. 261.

□ □ □

MEDICINE—How have some muscular dystrophy patients been helped? p. 262.

□ □ □

PHOTOGRAPHS: Cover, General Electric Company; p. 259, Fremont Davis; p. 261, Commonwealth of Australia, Dept of Supply; p. 263, University of Washington; p. 272, George S. Thompson Corp.

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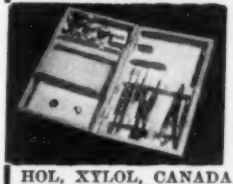

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NEW LUGGAGE is made of modernistic glass fiber and features a butyrate plastic handle, aluminum snaps and a combination lock. Available in four colors, the lightweight luggage has been designed in two series of sizes and styles for men and women.

Science News Letter, October 24, 1953

STEEL STEPLADDERS for heavy duty in libraries, factories and the home roll easily from spot to spot, but their casters automatically disengage when someone steps upon the non-slip step plates. Rubber-tipped legs then grip the floor for firm support. The casters re-engage when the person dismounts. Available in two, three, four and six-step sizes.

Science News Letter, October 24, 1953

HAND-HELD "LOOM" is a round plastic spool upon which strips of ribbon, wool, cotton or cord can be wound into a coarse medallion. Later the medallions are stitched together into attractive scatter rugs, table place mats or chair seats.

Science News Letter, October 24, 1953

NUTMEG MILL, designed to entice children to drink their milk, is made of light or dark satin-finished hardwoods and features stainless-steel mechanical parts with self-sharpening cutters. The mill, shown in the photograph, grinds up nutmeg into foaming milk to add fragrance and tastiness. Many children like to grind the nutmeg themselves.

Science News Letter, October 24, 1953

PLASTIC MODELING kits give children an outlet for their creativeness. The kits feature bright-colored clay-like plastic cut into "basic shapes" that can be modeled into a variety of objects such as airplanes and elephants. The finished object, when baked in an oven for 15 minutes, hardens and can be painted. But until baked, the vinyl plastic "clay" retains its moldability.

Science News Letter, October 24, 1953

CLOTHES SPRINKLER for the home laundry features a pump-action spray nozzle and dampens clothes quickly and evenly, eliminating hand sprinkling. The manufacturer reports that it can also apply starch as it dampens and that it can be used for spraying window cleaner, disinfectants, demothing fluid and insecticides.

Science News Letter, October 24, 1953

ELECTRIC TIMER works on a 24-hour-a-day basis, resetting itself every day to turn on home electrical appliances at the scheduled time. Somewhat resembling an electric clock, the device is housed in a gray plastic case and has six feet of heavy cord. It is good for turning on lamps in the house at dusk while the family is away, giving the impression to prowlers that someone is at home.

Science News Letter, October 24, 1953

APPLIANCE MAT converts the slippery tops of porcelained refrigerators, washing machines, clothes dryers and dish washers into handy storing space for salad bowls, toasters and detergents. Measuring 21 by 28 inches, the rubber mat can be scissor-trimmed to size.

Science News Letter, October 24, 1953

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Do You Know?

If everyone followed the recommendation of nutritionists and used five quarts of *milk* a week, America would consume one-fifth more milk than it does now.

Less than 20 years ago, the average *hen* laid one egg every three days; but continued research has raised her production level currently to one egg every two days.

Wet *wood* rarely holds paint for long periods.

There are 7,000 *psychiatrists* in this country; this is less than a third of the total needed, it is estimated.

An "agricultural bank" at the Department of Agriculture's Plant Industry Station, Beltsville, Md., acts as a living specimen storehouse for 200,000 of the world's *plants*.

Steps to prevent unused iceboxes from becoming *death traps* for children have been taken by local governments in six states.